Ueber ein neues Opticuscentrum beim Huhne. DR. PERLIA. Archiv für Ophthalmologie, Bd. xxxv, Abth. i, 1889. 1 Plate.

Upon studying in the chick the degeneration which follows the removal of one eye, Perlia finds, besides the usual degeneration of the contralateral tractus, a bundle of fibers which separates from the tractus at the ventro-lateral angle of the interbrain, and passes first dorsad then caudad along the mesal margin of the optic lobes, finally terminating in a large nucleus which lies laterad of the trochlearis nucleus, and is at least twice the size. The ganglion appears to connect with the *lobus opticus*, with the motor nuclei, and with the ventral portions of the axis. This bundle and its nucleus degenerate when the optic tract degenerates. Pending further work on its function, Perlia designates this as the median optic bundle, and makes the plausible suggestion that it will be found connected with the pupillary movements, which are so well developed in the bird.

Die Formentwickelung des menschlichen Vorderhirn von Ende des ersten bis zum Beginn des dritten Monats. WILHELM HIS. Abhandl. d. Mathemat.-phys. Cl. d. Königl. Sächs. Gesellschaft d. Wissenschaften. Bd. xv. Leipzig, 1889. 1 Plate.

This, the most recent paper by His on the development of the nervous system, is well supplied with cuts, and has, moreover, one plate of very unusual excellence in every way. The text is mainly a description of the contained figures, so that it cannot be given in abstract, save in a very incomplete manner. The immediate object of the paper is to give the topography of the first appearances (*primäre Anlagen*) of the different portions of the encephalon; only in the case of the olfactory lobe does the author enter into histological details. He opens with a discussion of the axial flexures of the mid and forebrain. Under the head of primitive longitudinal divisions of the mid and forebrain, His maintains that the division of the lateral half of the neural tube into a dorsal wing-plate (*Flügelplatte*) and a ventral basal-plate (*Grundplatte*) is recognizable not only in the region of the myelon, where he has already described it, but that it is continued cephalad to the extremity of the primitive forebrain. The line of demarcation between these two plates follows the flexures, as illustrated by the brain of *Ammocoetes* and that of a salmon embryo. This line terminates at a point just cephalad of the chiasma; and the optic tract, running as it does for some distance at the junction of the two plates, behaves like the ascending root of the other sensory cranial nerves.

The optic vesicle represents substance taken from the wall of the neural tube, and it is of great importance to determine from which of the above mentioned plates it may be derived. His decides that the main portion, and at least all that which forms the retina, comes from the basal plate. He is doubtful concerning the pigment layer alone, which may, in part, arise from the wing-plate. Morphologically, then, the retina is homologous with the anterior cornua of the spinal cord, and the region of the motor nuclei in the hind and mid-brain. This striking result puts the retina by itself, and separates it from all the other sensory organs thus far described. In speaking of the formation and protrusion of the optic vesicles, His holds to the mechanical explanation for the former, and goes into the anatomy of the region in the embryo in much detail. In the first stages the optic stalk enters the optic cup eccentrically, the point of union lying ventrad of the centre of the cup. With the change in the position of the eye, as development proceeds, the bulbs move cephalad and mesad, the change of position taking place in such a manner that the junction of stalk and cup becomes mesal. The optic nerve fibers follow the line of the optic stalk. It thus comes about that the eccentric insertion of the optic nerve in

the retina of the developed eye is a consequence of the similar relation of the stalk to the cup in the embryo.

When the hemispheres commence to develop, it is not until the end of the fourth week that they are at all divided into right and left, and the first indication of division is, curiously enough, a longitudinal ridge in the parietal region. A careful description of the development of the forebrain region, including the plexuses, *corpus striatum*, and the divisions of the interbrain, finally brings the author to a description of the olfactory region. The condition in the embryo is prefaced by a study of the region in the adult. Starting here from the bulb, and passing caudad, the olfactory tract splits into a median and lateral root. These first enclose the *trigonum*. Caudad of this, and separated from it by the *fissura prima*, is a roughly quadrilateral field, a portion of the anterior perforated space, which is bounded laterally by the lateral root of the tract, and mesally by the *gyrus subcallosus* (peduncle of the callosum). This region is the quadrilateral space of Broca. There is another small region lying in the mesal surface, and bounded by the *fissura prima* caudad and the *fissura serotina* frontad, and this His names "Broca's region." In discussing the olfactory lobe in the embryo, His divides it into a cephalic and caudal portion. The cephalic lobe in man gives rise to the bulbus, tractus, trigonum and Broca's field—to the caudal lobe belongs the *gyrus subcallosus* and the quadrilateral space. Where the bulbus comes to overlie the nose region, there is developed over a region of thickened nasal epithelium a true olfactory ganglion, consisting of bipolar nerve-cells, such as are found in the posterior root ganglia of the spinal cord. This ganglion appears first in embryos about 11 mm. in length. In the adult, the ganglion contributes the fiber and glomerular layers, the other portions of the bulbus being an outgrowth from the brain. This discovery, which brings the olfactory nerve in man into line with the typical sensory nerves, is a most welcome one, but the retina still remains, according to His, as much of a problem as ever. For the many other points of value, the reader is referred to the original.

Recherches sur les terminaisons des nerfs dans les disques terminaux chez la grenouille (Rana esculenta, Rana temporaria). J. FAJERSZTAJN. Arch. de zool. exp. et gen., 2d série, T. VII, 1889, p. 705—750, pls. XXXIII et XXXIV.

The author discusses at great length the conflicting results and opinions of Waller, Leydig, Billroth, Fixsen, Hoyer, Key, Hartmann, Engelmann, Merkel, Krause, and Holl. The memoirs of Beale and Maddox, on the arrangement of the nerves in the papillæ of the frog's tongue, were inaccessible to him. For fixing agents, in the present investigation, the best results were obtained with bichloride of mercury (5 to 100), Flemming's solution, and Carnoy's solution. The hardened tissues were imbedded in paraffin and in celloidin, preference being given to the latter. The cells of the disc were teased in a mixture of bichromate of potassium 4 to 100 + 1 to 100 of hydrate of chloral. A weak solution of eosin and iodine-green stained the cell nuclei green and the plasma of the cells red. For coloring the nerve terminations methylene blue, injected into the living animal according to Ehrlich's method, was mainly employed. Near the summit of the fungiform papillæ, and just beneath the end-discs is a "basal membrane," the *Nervenschale* of Key, *Nervenkissen* of Engelmann. Fajersztajn describes four kinds of cells in the end-discs, viz.: cylinder, winged, forked, and staff-shaped. The cylinder cells (*Cylinderzellen*, Merkel, Schwalbe, Holl) correspond to Key's modified epithelial cells, Engelmann's *Kelchzellen*, and Leydig's *Geschmackszellen*. Their central processes are very irregular and most difficult to follow. They reach the basal membrane, where they appear